Motivating Undergraduates in Science and Technology (MUST)
Administered by the Hispanic College Fund, Inc.
Type of Agreement: Cooperative Agreement
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NASA John H. Glenn Research Center at Lewis Field
216 433-3768

PROJECT DESCRIPTION

The Motivating Undergraduates in Science and Technology (MUST) project provides partial scholarships (renewable up to three years) to undergraduate students (rising freshmen, sophomores, juniors, or transfer students) to support up to fifty percent of tuition and fees, not to exceed $10,000. Students, who have accumulated 30 credits or more, will be offered an additional stipend of $5,000 to participate in an internship at a NASA Center related to their current field of study. This project addresses NASA's priorities and needs by producing vital NASA resources in the form of human capital while positively influencing education communities and the STEM competency of the Nation.

PROJECT GOALS

The goals and objectives of the MUST Project are to:

a. Develop STEM expertise leading to eventual degrees among groups that are currently underrepresented in the workforce, including women, minorities, persons with disabilities, and individuals from rural and low-income communities;
    - Provide 100 scholarships to students from underserved and underrepresented groups in an undergraduate STEM program at an accredited two or four-year institution.
    - Ensure 90 percent of MUST Scholars persist in a STEM major through the end of the academic year.
b. Provide culturally-sensitive support services such as tutoring and mentoring to ensure that students successfully complete their coursework and encourage degree completion;
    - Match MUST Scholar with at least three mentors;
    - Launch the MUST website available to MUST Scholars and mentors;
    - Maintain weekly contact with each MUST Scholar by email, and by phone monthly to ensure satisfactory progress and facilitate tutoring; and
    - By the end of the grant period, mentors will assist their MUST scholar in identifying at least one source for additional educational funding.

c. Provide hands-on research experiences that broaden interests in the aerospace industry;
    - 90% of MUST Scholars will participate in a research experience at a NASA Research Center or at an approved STEM facility.
    - Each MUST Scholar that participates in a research experience will develop an article that describes their experience, the results of the research work, and how the experience has impacted their future educational and career plans.
    - The MUST program will develop a publication that includes the research experiences of the MUST scholars.
d. Prepare students for a career in STEM by engaging them in holistic professional development experiences.
    - At least 30% of MUST Scholars will attend a career-focused professional conference.
    - At least 30% of MUST Scholars that had a research experience will submit a technical paper, presentation, or poster to an appropriate publication or conference.

PROJECT BENEFIT TO OUTCOME (1,2, OR 3)

The goals and objectives of the MUST project are designed to support the Agency Strategic Plan and the NASA Education goals, specifically, Education Outcome 1.

PROJECT ACCOMPLISHMENTS

During the 2007-2008 academic year, the MUST awarded approximately $549,405 in scholarships to 97 students. The 2007-2008 MUST Scholars completed their ten week research assignments at the NASA MUST centers on August 8, 2008. Of those students, 57% are eligible to renew their MUST status for the 2008-2009 academic year. The following statistics reflect the 2007-2008 scholars:

- The average award given was approximately $5,664.
- The average GPA of the NASA MUST scholars upon entry to the program was 3.65.
- 24% of MUST Scholars eligible to renew for the 2008-2009 year have been enrolled in the program since its inception.
- 40% have already participated in NASA education programming.
- 100% of the NASA MUST scholar cohort continues to pursue majors in the STEM disciplines.

89 MUST Scholars remained in the program and all completed a summer 2008 research experience at the following NASA centers:

Ames Research Center – 13 scholars

Johnson Space Center – 11 scholars

Dryden Flight Research Center – 1 scholars

Kennedy Space Center – 7 scholars

Glenn Research Center – 7 scholars

Langley Research Center – 11 scholars

Goddard Space Flight Center – 5 scholars

Marshall Space Flight Center – 5 scholars

Jet Propulsion Lab – 12 scholars

Stennis Space Center – 3 scholars

Cohort's Race and Ethnicity

49 Hispanic
27 African American
17 Caucasian
3 Pacific Islander
4 Native American

Gender: Males 56; Females 44

IMPROVEMENTS MADE IN THE PAST YEAR

- Outreach efforts were being stepped up, including recruitment; the MUST program reached out to a broader minority population, with the hopes of increasing the participation of African American and Native American students.
- Marketing of the MUST program has seen a huge improvement with the printing and publication of an annual report, informational brochure and postcard.
- A week-long professional development symposium was conducted in Phoenix, Arizona providing students the opportunity to meet one another, share career advice, meet NASA Center POC's and take part in numerous educational workshops from NASA technology to resume building and leadership studies.
- Operationally, the application process is being streamlined, as is the review process; judges were given an enhanced pool of candidates from which to choose.
- Web seminars were conducted, as part of an orientation to prepare and discuss with students what will be expected of NASA scholars.
- For the first time ever, the program involved students in the nominating process for faculty and graduate student mentors. As part of their acceptance package, students submitted five recommendations for outreach at their universities to both professors and students working on advanced degrees. The MUST program officers contacted these individuals, along with the scholars' department heads to provide them with details on the MUST PASS mentorship program. After those interested individuals fill out a profile/application, students will be matched to mentors to facilitate their interaction.
- A Travel Award program was implemented so students could present and share their research findings at conferences across the country.
- A new T-Shirt design competition was initiated. Students submitted their artwork and a winner exemplifying the best theme of motivating undergraduates in science and technology was chosen. The winner was recognized at the Phoenix symposium in November, and will be awarded a NASA gift basket and $500 gift card to their University bookstore. All student scholars were given a T-shirt with the winning design signed by the student artist at the symposium.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT

Background

The MUST Consortium is a dynamic collaboration of highly qualified and experienced minority non-for-profit organizations with applicable expertise to manage all facets of the MUST Program. Each member has an established track record of providing education and support services to Minority Institutions, faculty, and students. Each partner brings numerous strengths that, when combined, create a comprehensive portfolio of expertise in cultural competence, outreach, recruitment, scholarship administration, internship placement, student monitoring and tracking, mentoring, and professional development support. Working together, the members can leverage their unsurpassed network of Minority Institutions, administrators, faculty, and students to ensure high competitive participation from a broad spectrum of targeted underrepresented and underserved minorities.

MUST Consortium Members

The Hispanic College Fund (HCF) is a national non-profit organization founded in 1993 to develop the next generation of Hispanic professionals by awarding need and merit-based scholarships to deserving Hispanic students. HCF programs target high-achieving Hispanic students that are pursuing undergraduate degrees in business, science, technology, engineering and mathematics. The Hispanic College Fund brings years of experience administering scholarships and working directly with institutions of higher education to support Hispanic youth.

The United Negro College Fund Special Programs (UNCFSP) is an independently established 501(c)(3) nonprofit organization, UNCFSP has a broad mandate of serving domestic and international Minority Institutions, including Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Tribal Colleges and Universities (TCUs), and Other Minority Institutions (OMIs). UNCFSP currently manages eighteen capacity building, workforce development, and technical assistance programs, including a robust portfolio of STEM programs sponsored by NASA, the Department of Defense, and the Department of Energy. UNCFSP possesses strong expertise in recruitment; application receipt, review, and selection; internship placements, monitoring and tracking, evaluation, and dissemination.

The Society for Hispanic Professional Engineers (SHPE) is a national organization of professional engineers that serve as role models in the Hispanic community. SHPE has a strong independent network of 51 professional chapters and 191 student chapters throughout the United States and Puerto Rico. The largest Hispanic, engineering organization, SHPE has national programs for leadership training that develop organizational and community leaders, educational programs that span across the pre-college to Ph.D. pathway, and professional development initiatives that include a national conference and career fair, which allow corporations, government agencies and

universities to host presentations and recruit SHPE members. SHPE AHETEMS focuses, improves and expands SHPE's pre-college through Ph.D. educational programs organized into three areas: 1) Pre-College Programs, 2) Undergraduate Programs, and 3) Graduate Programs.

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